Notice of Allowability	Application No.	Applicant(s)	
	10/091,724	ASHKAR, SAMY	
	Examiner	Art Unit	
	Carla Myers	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the 'Interview Summary' filed 5/16/06*.

2. ☒ The allowed claim(s) is/are *1,2,5-18 and 23-26*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *5/17/06* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

A. An extension of time under 37 CFR 1.136(a) is required in order to make an examiner's amendment which places this application in condition for allowance. During a telephone conversation conducted on May 17, 2006, Heather Boussios requested an extension of time for 3 MONTH(S) and authorized the Director to charge Deposit Account No. 50-1283 the required fee for this extension and authorized the following examiner's amendment. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

B. **The application has been amended as follows:**

(i) Claims 3 and 4 have been canceled.

(ii) Claims 1, 9, 11, and 13 have been amended as follows:

Claim 1. A method for identifying minicell hosts bound to a binding partner comprising: (a) expressing a fusion protein in a minicell host comprising an outer membrane, wherein the fusion protein is encoded by a chimeric gene comprising: a DNA fragment encoding an N-terminal fragment of a 17K antigen of *Rickettsia rickettsii* consisting essentially of a signal sequence and lipid modification site which mediates localization of the fusion protein to the outer membrane, and a DNA fragment encoding a second peptide; (b) contacting the minicell host of step (a) with a binding partner; and (c) identifying the minicell hosts bound to the binding partner.

In claim 9, delete "7" and insert -- 8 -- therefore.

In claim 11, delete "10" and insert -- 10 -- therefore.

Claim 13. The method of claim 1, wherein the DNA fragment encoding the N-terminal fragment of the 17K antigen comprises the first 213 nucleotides of the open reading frame of the 17K antigen of *Rickettsia rickettsii.*

(iii) Claims 24-26 have been added:

Claim 24. The method of claim 13 wherein the DNA fragment encoding the N-terminal fragment of the 17K antigen consists of the nucleic acid sequence of SEQ ID NO: 6.

Claim 25. The method of claim 1, wherein the N-terminal fragment of the 17K antigen comprises the first 71 amino acids of the 17K antigen.

Claim 26. The method of claim 25, wherein the N-terminal fragment of the 17K antigen consists of the amino acid sequence of SEQ ID NO: 5.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

The closest prior art of Huang teaches methods for identifying host cells bound to a binding partner and methods for synthesizing and detecting a fusion protein comprising: (i) expressing a fusion protein in a host cell wherein the fusion protein is encoded by a chimeric gene comprising a first DNA fragment encoding a first peptide that mediates attachment of the fusion protein to the outer membrane and a second

DNA fragment encoding a second target peptide; (ii) contacting the host cell with a binding partner so as to form a complex between the fusion protein/host cell and the binding partner and detecting the host cells bound to the binding partner (see columns 5-7). Huang teaches performing the method using bacteria host cells to express the fusion protein, but does not teach using bacterial minicell hosts to express the fusion protein.

Clark-Curtiss teaches methods for expressing heterologous proteins in a minicell host. In particular, Clark-Curtiss exemplifies methods for expressing fusion proteins in minicells having a lon mutation and teaches that the proteins produced by such minicells have increased stability.

Georgiou (see, e.g., column 3, lines 42-52) teaches methods for synthesizing fusion proteins that are expressed on the cell surface of a gram negative bacterial cell. Georgiou teaches chimeric genes containing a first DNA fragment encoding a signal sequence that directs a fusion protein to be expressed and anchored to the outer membrane of the host cell. The reference teaches a number of signal sequences that may be used for this purpose and specifically teaches that the signal sequence may be obtained from the 17kDa lipoprotein from *Rickettsia rickettsii* (column 3, lines 53-68 through column 4, line 3; column 5, lines 29-56).

However, the prior art when considered as a whole does not teach or suggest the claimed methods for identifying a minicell host bound to a binding partner wherein the methods comprise expressing a fusion protein in a minicell host wherein the fusion protein is encoded by a chimeric gene comprising a DNA fragment encoding a peptide

and a DNA fragment encoding an N-terminal fragment of the 17K antigen of Rickettsia rickettsii consisting essentially of the signal sequence and lipid modification site and detecting the binding of a binding partner to the minicell host. Specifically, while Georgiou teaches the use of *Rickettsia rickettsii* 17K antigen sequences to target and anchor a fusion protein to the outer surface of a gram negative bacterial cell, Georgiou does not teach or suggest the use of the N-terminal region of the 17K antigen of *Rickettsia rickettsii* containing the signal sequence and lipid modification site to target and anchor a fusion protein to the outer membrane surface of a minicell host. Further, the combined teachings do not provide a reasonable expectation that a DNA fragment encoding the N-terminal fragment of the 17K antigen of Rickettsia rickettsii consisting essentially of the signal sequence and lipid modification site could be used in a chimeric gene to effectively synthesize and express a fusion protein on the outer membrane surface of a mini cell and that the resulting minicells could be effectively used in a method to identify minicell hosts bound to a binding partner.

It is further noted that the present claims recite the language of a DNA fragment encoding an N-terminal fragment of a 17K antigen of *Rickettsia rickettsii* consisting essentially of a signal sequence and lipid modification site." As indicated in Applicant's Interview Summary filed May 16, 2006, the phrase "consisting essentially of" is intended to disclaim the use of a fusion protein containing the full length 17K antigen as well as fusion proteins containing an N-terminal fragment of a protein containing a signal sequence and lipid modification site other than the 17K antigen of *Rickettsia rickettsii.*

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carla Myers whose telephone number is (571) 272-0747. The examiner can normally be reached on Monday-Thursday from 6:30 AM-5:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on (571)-272-0735.

The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866)-217-9197 (toll-free).

Carla Myers
May 17, 2006

Carla Myers
CARLA J. MYERS
PRIMARY EXAMINER